

What is claimed is:

1 1. A metal halide lamp, comprising:  
2 a ceramic arc tube that is composed of a main body  
3 and two narrow tube parts provided at respective ends of  
4 the main body;  
5 a pair of electrodes provided inside the main body;  
6 two feeders, each being connected at one end thereof  
7 to a different one of the electrodes inside the main body,  
8 and extending through a different one of the narrow tube  
9 parts, so as to be external to the arc tube at another end;  
10 a starting wire that is connected to one of the feeders,  
11 and that is in a vicinity of or contacts an outer surface  
12 of the arc tube; and  
13 a current suppressing unit that is on a current path  
14 of the starting wire, and suppresses or cuts off current  
15 on the path.

1 2. The metal halide lamp of Claim 1, wherein  
2 the current suppressing unit is a circuit breaking  
3 element.

1 3. The metal halide lamp of Claim 2, wherein  
2 the circuit breaking element is a resistor.

1 4. The metal halide lamp of Claim 3, wherein  
2 a resistance value of the resistor is in a range of  
3 1 k $\Omega$  to 1 M $\Omega$ , inclusive.

1 5. The metal halide lamp of Claim 4, having a power rating  
2 in a range of 50W to 400W, inclusive,  
3 wherein two terminals that each connect to a power  
4 supply path are provided at two different positions on the  
5 circuit breaking element, a distance between the terminals  
6 being at least 4.5 mm.

1 6. The metal halide lamp of Claim 5, wherein  
2 the arc tube is accommodated in an outer tube,  
3 a sleeve that encloses at least the main body is  
4 provided between the outer tube and the arc tube,  
5 a first supporting part and a second supporting part  
6 are provided at respective ends of the sleeve in order to  
7 hold the sleeve, and  
8 the circuit breaking element is provided in the outer  
9 tube, in a space that is outside a space between the first  
10 supporting part and second supporting part.

1 7. The metal halide lamp of Claim 6, wherein

2       the first supporting part is joined to the feeder to  
3    which the starting wire is connected, and has an aperture  
4    through which the starting wire passes, and

5       a minimum distance between the first supporting  
6    part and a part of the starting wire that passes through  
7    the aperture is at least 4.5 mm.

1    8. The metal halide lamp of Claim 7, wherein

2       one end of the starting wire is wound around a part  
3    of the arc tube that is resistant to deformation if the  
4    arc tube breaks.

1    9. The metal halide lamp Claim 2, wherein

2       the circuit breaking element is a capacitor.

1    10. The metal halide lamp of Claim 1, wherein

2       the current suppressing unit is a circuit breaking  
3    element that cuts current to the starting wire within a  
4    predetermined amount of time of abnormal discharge  
5    commencing.

1    11. The metal halide lamp of Claim 10, wherein

2       the predetermined amount of time is 10 seconds.

1 12. The metal halide lamp of Claim 10, wherein  
2 the predetermined amount of time is 1 second.

1 13. The metal halide lamp of Claim 12, wherein  
2 the circuit breaking element is a fuse whose current  
3 capacity is equal to or less than a value of current required  
4 for ordinary operation of the metal halide lamp.

1 14. The metal halide lamp of Claim 13, wherein  
2 two terminals that connect to a power supply path are  
3 provided at two different positions on the circuit breaking  
4 element, a distance between the terminals being at least  
5 4.5 mm.

1 15. The metal halide lamp of Claim 14, wherein  
2 the fuse is the starting wire.

1 16. The metal halide lamp of Claim 15, wherein  
2 when abnormal discharge occurs, the starting wire  
3 melts, within the predetermined amount of time, to an extent  
4 that a discharge distance is insufficient for abnormal  
5 discharge to continue.

1 17. The metal halide lamp of Claim 16, wherein

2       the starting wire is made of a metal selected from  
3       the group consisting of molybdenum, tungsten, niobium, and  
4       iron, or of an alloy that contains a metal selected from  
5       the group.

1   18. The metal halide lamp of Claim 17, wherein  
2       the starting wire is a molybdenum wire that has a  
3       diameter of 0.2 mm or less.

1   19. The metal halide lamp of Claim 18, wherein  
2       the arc tube is accommodated in an outer tube,  
3       a sleeve that encloses at least the main body is  
4       provided between the outer tube and the arc tube,  
5       a first supporting part and a second supporting part  
6       are provided at respective ends of the sleeve in order to  
7       hold the sleeve, and  
8       the circuit breaking element is provided in the outer  
9       tube, in a space that is outside a space between the first  
10      supporting part and second supporting part.

1   20. The metal halide lamp of claim 19, wherein  
2       the first supporting part is joined to the feeder to  
3       which the starting wire is connected, and has an aperture  
4       through which the starting wire passes, and

5       a minimum distance between the first supporting  
6 part and a part of the starting wire that passes through  
7 the aperture is at least 4.5 mm.

1 21. The metal halide lamp of Claim 19, wherein  
2       one end of the starting wire is wound around a part  
3 of the arc tube that is resistant to deformation if the  
4 arc tube breaks.

1 22. The metal halide lamp of Claim 2, further comprising:  
2       a sleeve that encloses the arc tube; and  
3       a supporting part that supports the sleeve at at least  
4 one end of the sleeve, and is conductive,  
5       wherein the starting wire passes through the  
6 supporting part in a state of insulation from the supporting  
7 part.

1 23. The metal halide lamp of Claim 22, wherein  
2       the starting wire passes through insulation provided  
3 on the supporting part, the insulation lying between the  
4 starting wire and the supporting part.

1 24. The metal halide lamp of Claim 23, wherein  
2       a slant distance between the starting wire and one

3 of the electrodes that is not the electrode connected to  
4 the starting wire via the one of the feeders, is shorter  
5 than a distance between the electrodes.

1 25. A metal halide lamp manufacturing method, comprising:  
2 a starting wire formation step of forming a starting  
3 wire by applying a bending process to a wire so as to bend  
4 the wire into a shape that corresponds to a shape of an  
5 arc tube;  
6 a fitting step of fitting the formed starting wire  
7 around an outer surface of the arc tube;  
8 a connecting step of connecting the starting wire to  
9 a mechanism that is present in the metal halide lamp and  
10 that suppresses or cuts off current.

1 26. The manufacturing method of Claim 25, wherein  
2 the arc tube is composed of a main body part and two  
3 narrow tube parts that extend from respective ends of the  
4 main body, and  
5 in the starting wire forming step, at least two parts  
6 of the wire are formed into fitting parts, each for fitting  
7 to a different one of the narrow tube parts by winding  
8 therearound with less than one turn.

1 27. The manufacturing method of Claim 26, wherein  
2        respective axes of the narrow tube parts are on  
3 substantially a same straight line, and  
4        when the starter conductor is in a free state,  
5        respective axes of the fitting parts are mutually offset.

1 28. The manufacturing method of Claim 27, wherein  
2        the wire includes at least one element selected from  
3 the group consisting of molybdenum, tungsten, niobium, and  
4 iron.